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SCT SYSTEMS CONTROL TECHNOLOGY, INC.

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RAPID AIR DEFENSE EVALUATION SYSTEM
(RAIDES)

INSTRUCTOR/LESSON GUIDES

PREPARED FOR:

DEPARTMENT OF THE ARMY
JOINT TACTICAL FUSION PROGRAM
1500 PLANNING RESEARCH DRIVE
McLEAN, VA   22102-5099

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This document was developed as a student instructor/lesson guide manual for the US Army's Rapid Air Defense Evaluation System (RAIDES). There are five manuals for RAIDES. RAIDES was developed by Systems Control Technology, Inc, Palo Alto, CA for the Joint Tactical Fusion Program Management Office (JTFPMO). RAIDES is a derivative of USAFE's Force Level Automated Planing System (FLAPS) and was extensively modified to incorporate US Army air defense forces. The RAIDES program consists of two major stand-alone software programs: the SUPR program which defines a 3-D real-world statespace area where the US Army air defenders would operate; and RAIDES which provides Blue survivability estimates for Red attacking forces given a specific battlefield scenario and real-world threat. This manual compliments the RAIDES Student Training Course Guide and Positional Handbook that are used with the JTFPMO's Portable Analyst Workstation (PAWS). This manual provides an instructional outline for providing a first-time RAIDES user with On-The-Job training and covers a majority of the capabilities of the RAIDES program.

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RAIDES INSTRUCTOR/LESSON GUIDE
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INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAPID AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 1

CLASSIFICATION: UNCLASSIFIED

TOPIC: I.TRODUCTION TO RAIDES

TIME: 2 hrs

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS
MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

   Instructional References:

   Instructional Aids: Viewgraphs,
      Overhead projector, Slides,
      Slide projector

TERMINAL OBJECTIVE: To acquaint
   the students with the
   purpose and functions
   of RAIDES.
ENABLING OBJECTIVES:

CRITERION TEST:

HOMEWORK:

I. INTRODUCTION

A. Lesson Objectives

   To acquaint the students with the purpose and capabilities of RAIDES.

B. Lesson Overview

   The purpose of RAIDES is to enable the user to perceive the effects
   of deployment of air defense assets in order to maximize their
   effectiveness in defending the commander's priorities.

   To accomplish this purpose RAIDES has the following capabilities:

   1. Displays current deployment of Air Defense assets
       and the relative lethality to attacking aircraft of those
       assets in their current deployment.

   2. Allows the user to move any currently deployed assets
       to a new location, and to observe the terrain masked defense
       envelope of the asset at its new location.

   3. Allows the user to deploy new assets to sites, and to
       observe the terrain masked defense envelope of the defenses at
       its deployed site.

   4. Allows the user to observe the relative lethality
       statespace showing the effects of the redeployment of
       Air Defense assets to attacking aircraft.

   5. Allows the user to observe weaknesses in defenses by
       constructing minimum risk routes through the statespace area
       and analyzing them.

   6. Allows the user to observe the effectiveness of the
       defenses against anticipated attack tactics by allowing the
       user to modify routes and perform a detailed analysis of
       the modified routes.

II. PRESENTATION

A. RAIDES is an Air Defense analysis tool

1. RAIDES is a prototype system.
2. Commander's priorities are input by user.
3. RAIDES uses Digitized Terrain Elevation Data in determining asset's effectiveness.

B. RAIDES uses a digital map background and is mouse driven for ease of use.

C. RAIDES displays current laydown of Air Defense assets and the relative lethality to attacking aircraft of those assets in their current deployment.

1. RAIDES has the capability to pull current deployment from formatted ascii text files.
2. Current deployment is matched against asset capabilities and terrain data to create a relative lethality statespace.
3. Current deployment is shown as a series of color coded circles against a map background, or as a defense identifier in position against a map background, or as a list of defenses and their positions from the report generator.
4. Lethality to attacking aircraft, (and coverage of critical target areas) is shown as a series of danger contours.

D. RAIDES allows the user to move any currently deployed assets to a new location, and to observe the terrain masked defense envelope of the asset at its new location.

1. RAIDES allows the user to select an individual asset (defense) and move to a new location. Locations are selected graphically.
2. Pre-surveyed sites associated with individual assets are automatically displayed when a given asset is selected.
3. RAIDES shows the terrain masked defense envelope of the

asset at its new location. Note: terrain masking an asset is time consuming.

4. RAIDES on command updates the relative lethality statespace with the asset's new location, so the user can display the effects of the redeployment in terms of increased lethality to aircraft attacking high priority assets.

E. RAIDES allows the user to deploy new assets to the scenario, and to observe the terrain masked defense envelope of the defenses at their deployed site.

1. RAIDES allows the user to add new assets to the current (or modified) deployment. The user must indicate asset identifier, type, and location.

2. Asset location is indicated graphically.

3. Pre-surveyed sites are unknown for new assets.

4. RAIDES shows the terrain masked defense envelope of the asset at the indicated location. Note: terrain masking an asset is time consuming.

5. RAIDES updates the relative lethality statespace with the new asset location, so the user can display the effects of the new asset in terms of increased lethality to aircraft attacking high priority assets.

F. RAIDES allows the user to observe the relative lethality statespace showing the effects of the redeployment of Air Defense assets to attacking aircraft.

1. Modified deployment can be displayed through a color coded display of asset (defense) circles, asset (defense) id's, or a tabular listing of defenses and defense locations from the report generator.

2. Modified statespace can be displayed showing relative lethality information for new deployment.

G. RAIDES allows the user to observe the weaknesses in the current or modified defenses by constructing minimum risk routes through the statespace area and allowing the user

to analyze those routes.

1. To create minimum risk routes, attack tasking must be input via a tasking form.
2. Use ROUTE from the Plan Options Menu to create minimum risk routes.
3. To output a detailed leg by leg analysis of the minimum risk route, use the REVIEW function off the Plan Options Menu.
4. Minimum risk routes can be displayed graphically through DISPLAY or TIME PHASE.

H. RAIDES allows the user to gauge the effectiveness of the current or modified defenses by allowing the user to modify routes to simulate anticipated enemy attack tactics.

1. Modify routes through MANUAL function off Plan Options Menu.
2. User may add or delete points, or reoptimize routes.
3. Detailed leg by leg analysis can be performed by selecting the REVIEW option off the Plan Options Menu.

III. SUMMARY

RAIDES is an Air Defense Evaluation tool, which allows the user to show the effects of deploying assets in terms of lethality to aircraft attacking high value target areas.

IV. APPLICATION

RAIDES demonstration

INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAPID AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 2

CLASSIFICATION: UNCLASSIFIED

TOPIC: GETTING STARTED IN RAIDES

TIME: 1 hr

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

Instructional References:

Instructional Aids: Viewgraphs,
    Overhead projector

TERMINAL OBJECTIVE: To have the students be able to start the program, and operate the pop-up and text menus.

ENABLING OBJECTIVES:

CRITERION TEST:

HOMEWORK:

I. INTRODUCTION

A. Lesson Objectives

To enable the students to start up RAIDES, and to operate the pop-up and text menus.

B. Lesson Overview

RAIDES is run on a Microvax II based PAWS (Portable ASAS/ENSCE WorkStation) system (FIGURE 1). Standard VMS system commands are used to login and move to the appropriate subdirectories in which RAIDES may be run.

Pop-up menus are graphics oriented, and require the user to select options using the PAWS mouse.

Text menus appear in a window on the text screen. They must be responded to via the keyboard. Text menus are used primarily for database functions.

II. PRESENTATION

A. The PAWS system is a Microvax based graphics oriented computer workstation.

1. The PAWS system configuration
   a. The text screen (Figure 1).
   b. The graphics (map) screen (Figure 1).
   c. The PAWS mouse (Figure 1).

B. How to Login and run RAIDES

1. Creating a login window. A login window is created by positioning the mouse at the place you would like to have the window on the text screen and clicking the left mouse button. It is a good idea to position the window in the lower portion of the screen since RAIDES pop-up menus will primarily use

the upper portion. A small pop-up menu will appear
- select "CREATE NEW VT220 WINDOW" from the menu by
positioning the mouse over the selection and
clicking the left button. A login window will be
created for you.

2. Login procedure. Enter login account name and
password. These will be provided for you.

3. How to run RAIDES. Enter command provided to run
RAIDES. You will see "READ IN PREVIOUS FILES
(Y/N)?". Type 'Y' and hit <return>. Wait while the
files are opened. When they have finished, you will
see the Main Menu come up (Figure 3). You are ready
to begin issuing RAIDES commands. When you have
finished using the program, always exit using the
exit command on the Main Menu, DO NOT use ^C (CTRL
C) or ^Y (CTRL Y) to exit the program.

C. Pop-up menus

1. Getting the first pop-up menu. Type the command S7
in at the Main Menu and hit <return>. You will see
a pop-up Main Menu appear on the upper right of the
text screen (Figure 4). All pop-up menus have a
black title bar across the top with the name of the
menu in it. The menu names can be used to reference
menu documentation.

2. Selecting items from a pop-up menu. Select items
from the pop-up menu by moving the mouse over the
option you want to select and clicking the left
button on the mouse.

3. Moving pop-up menus. Pop-up menus can be moved. This can be important if the login window you created is underneath a pop-up window and you need to see it. To move a pop-up window, position the mouse on its title bar. Press and hold down the left button. While the button is still depressed, move the mouse to the position on the screen you would like to have the pop-up moved to and let go of the button. You will see the outline of the pop-up move across the screen as you do this and the menu will appear again when you release the button.

4. Scroll bars (Figure 5).

5. Getting out of pop-up menus. Most pop-up menus will have the option "Exit" or "Exit this menu". Select this when you want to get out of a menu. Some menus have the option "OOPS". Select this option when you made a mistake getting to this menu.

D. Input Boxes

1. Input boxes require the user to type input from the keyboard.

2. Type in information requested on title bar of input box in the format specified. Be sure that you follow the format specifications exactly.

3. For input boxes with multiple fields, use the tab or arrow keys to move through the fields. A carriage return indicates input has been complete for all fields.

A geographical point can be specified in any of the following four ways:

1. An optional UTM zone and a 6,8 or 10 character UTM
   co-ordinate." The UTM zone defaults to 31U, 32U or
   33U, depending on the UTM co-ord."
   For example: 32U PA19199600.

2. Latitude/longitude in degrees, minutes, optional
   seconds," optional tenths of seconds and
   hemisphere."
   For example: 503010.2N 0104050.5E

3. Decimal latitude/longitude with a minus sign used
   for South" latitude or West longitude.
   For example: 50.5028 10.6807.

4. Latitude/longitude in degrees, minutes, hundreths of
   minutes" and hemisphere."
   For example: 5030.17N 01040.84E.

E. Text menus (Figure 6)

1. Selecting items from a text menu.
2. Paging through text menus.
3. Toggle menus.
4. Active windows and the black cursor. If you have opened more than one window on the workstation there will only be one active window at a time. The active window will have a solid black cursor in it. You cannot type information into a window that is not active. To change the active window, position the mouse somewhere in the window you want to be active and click the left button.

F. Messages

1. Messages appear in the text menu window.
2. Messages may require a response from the user. Sometimes the user is required to enter a carriage return. The message will explain what you are to do.
3. Messages are documented in the RAIDES positional handbook.

III. SUMMARY

RAIDES operates in a standard VMS, Microvax II based computer environment. It has pop-up menus which are operated through use of the mouse, and text menus which are operated through the keyboard.

IV. APPLICATION

Demonstration and if practical, hands on training.

INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAPID AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 3

CLASSIFICATION: UNCLASSIFIED

TOPIC: USING THE DATABASE MANAGER

TIME: 2 hrs

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS
MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

Instructional References:

Instructional Aids: Viewgraphs,
    Overhead projector

TERMINAL OBJECTIVE: To enable
the students to modify
the RAIDES database using
the database manager.
ENABLING OBJECTIVES:

CRITERION TEST:

HOMEWORK:

I. INTRODUCTION

A. Lesson Objective

To enable the user to manipulate the database through the database manager.

B. Lesson Overview

1. The database is accessed solely through the text menus.

2. The database has a distinct structure, which can be compared to tabular information in a book.

3. The database manager has six database manipulation functions, plus a report generator function. The database functions are:

   a. ADD
   b. DELETE
   c. CHANGE
   d. COPY
   e. SHOW
   f. WRITE

II. PRESENTATION

A. The database manager is accessible solely through use of the text window menus. Using text window menus is described in lesson 2.

B. The Database structure can be compared to tables in a book, where pages are tables, lines are records, and columns are items.

1. Tables contain information about one basic thing. Example: TGT table contains information about targets.

2. Records contain information about a specific thing. Example: record TargetA in the TGT table contains information about Target A.

3. Items contain the actual information. Example: the item X in the record TargetA in the TGT table contains the Latitude Longitude of Target A.

4. Some items are vector items, which means they contain more than one value. Example: the number and type of weapons stored at a particular location.

5. The exact items in each table are specified in the positional handbook, under database specification.

C. The Database Manager has six database manipulation functions.

1. ADD -- to add a new record of information to a table, specify the Table to add to, the record identifier, and the data items for the record as they are requested by the program.

2. DELETE -- to delete a record or records of information from a table, specify the Table and the record(s) to delete.

3. CHANGE -- to change data in a record or records, specify the table, record(s), item(s), and data to change to.

4. COPY -- to copy a record to another record, specify the table, the record to copy, and the identifier of the new record.

5. SHOW -- to show data from a table, specify the table, record(s) and item(s) to show.

6. WRITE -- to save data in an ascii text file on disk, specify the name of the file to output to, the table and record(s) to output. WRITE does not remove data from the database.

D. The Database Manager contains a report generator which allows the user to output and create his own reports from the database.

1. To show an already created report, select REPORT from the Database Menu, then select SHOW. The report will page down the screen. To continue looking at the.report, hit a carriage return. To Quit from the report hit Q.

2. To create or modify a report, type in the report name, then respond to the menus as directed. The report generator allows the user to show items, specify test conditions on records to display based on items, modify headers, and

sort on non-vector items.

III. SUMMARY

The database manager allows the user to manipulate the contents of the database. To use the database manager it is important to understand the database structure which is specified in the positional handbook by table. The database manager also allows the user to create and output tabular format reports.

IV. APPLICATION

Demonstration, if practical, hands on training.

INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAPID AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 4   TERMINAL OBJECTIVE: To enable
                                                     the students to use the
CLASSIFICATION: UNCLASSIFIED   RAIDES display capability.

TOPIC: THE RAIDES DISPLAY   ENABLING OBJECTIVES:

TIME: 2 hrs

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS
MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

  Instructional References: CRITERION TEST:

  Instructional Aids: Viewgraphs,
    Overhead projector   HOMEWORK:

I. INTRODUCTION

   A. Lesson Objectives

      To enable the students to use the RAIDES display capability.

   B. Lesson Overview

      1. Graphics Displays.

      2. Map Displays.

      3. Modifying Defenses.

II. PRESENTATION

   A. Graphics Displays

      These options allow the user to change the color graphics
      overlaying the map. Changes are made by toggling on or off
      selections on the menu and then selecting the DISPLAY
      option to update the graphics display (Figure 1).

      1. Select defenses -- may select all defenses, select by
          type, or select individual defenses.

      2. Circles -- Toggles defense radius circles on or off.
          This option works in conjunction with the SELECT DFNS
          option.

      3. Exposure -- Toggles terrain masked defense exposure
          contours on or off. This option works in conjunction
          with the SELECT DFNS option.

      4. Defense IDs -- Toggles defense IDs on or off. This
          option works in conjunction with the SELECT DFNS
          option.

5. Danger -- Toggles threat danger contours on or off. If toggled on, the user must enter the danger coutour levels he wishes to see.

6. Plan -- Toggles the routes in the current plan on or off.

7. Legend -- Toggles legend on or off.

8. Terrain -- Toggles terrain contours on or off. If toggled on, the user must enter the terrain elevation levels he wishes to see.

9. Features -- Toggles all features in the FEAT table on or off.

10. FLOT -- Toggles FLOT on or off.

11. Bases -- Toggles base IDs on or off.

12. TGT -- Toggles target IDs on or off.

B. Map Displays

These options affect the map. These options work independently from the graphics options. Selection of any of these options will cause the map to update immediately and any of the graphics options that have been toggled since the last time the DISPLAY option was selected will be forgotten. Always select DISPLAY after toggling graphics options to protect your selections from being lost.

1. Map scales -- map scales available are 1:1M, 1:500k, 1:250k, 1:50k depending on location. Click on desired map scale.

2. Scenario -- displays the defined scenario over minified 1:1M maps.

2. Scenario -- displays the defined scenario over minified 1:1M maps.

3. 0.5X, 0.75X, 1X, 2X, 3X zoom options -- zooms to the specified magnification of the current map scale. Zoomed area is centered on current map.

4. Magnify -- magnify creates a cursor area in which the digital map (at the current scale) is magnified. Clicking the left mouse button causes the whole screen to zoom to a 2X of the current map. Clicking the center mouse button causes the map to return to the original 1X zoom. Clicking the right mouse button causes an exit from magnify and returns the zoom scale to 1X. When the map is zoomed in magnify, the classification is shown over the cursor box, and the display and cursor roam over the entire map picture.

5. Intensity -- Allows the user to change the map display intensity. You must select a number between 0.01 and 0.99 for the intensity level. It is a good idea to lower the map intensity to make the overlying graphics more visible.

6. Jump To -- Allows the user to input a new latitude and longitude or UTM for the center of the map.

7. Roam -- Allows the user to move the map slightly in one of eight directions: North, South, East, West, Northeast, Northwest, Southeast, and Southwest.

8. Gray Map -- Toggles the map background between color and grey tones.

9. Slide Map -- Allows the user to graphically move the displayed region.

10. Location -- Allows the user to graphically select a point and returns the location and elevation of the point.

III. SUMMARY

Display is divided into two types of options, graphics displays and map functions. Map functions override graphics options, and graphics functions are updated whenever display is selected. The user may display defenses, routes, terrain and scenario features, and may modify the map characteristics.

IV. APPLICATION

Demonstration, and if practical hands on training.

INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAPID AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 5

CLASSIFICATION: UNCLASSIFIED

TOPIC: DEPLOYING ASSETS WITH TERRAIN MASKING EFFECTS

TIME: 2 hrs

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS
MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

Instructional References:

Instructional Aids: Viewgraphs,
    Overhead projector

TERMINAL OBJECTIVE: To have
    the students be able to
    redeploy Air Defense assets
    while showing terrain masking
    effects.

ENABLING OBJECTIVES:

CRITERION TEST:

HOMEWORK:

I. INTRODUCTION

A. Lesson Objective

To enable the user to redeploy defense assets through use of the MODIFY and WHAT IF options.

B. Lesson Overview

1. The user may redeploy assets through the MODIFY option off the Main Menu. Moving assets via MODIFY will not effect the current display.

2. The user may also redeploy assets through the WHAT IF option off the DISPLAY Menu. Moving assets through WHAT IF allows the user to observe the terrain masked threat envelopes of the asset in it's new location, but can be very time consuming.

II. PRESENTATION

A. The user may redeploy assets through the MODIFY option off the Main Menu. The MODIFY option allows direct modification of the THRT file and updating the statespace. Changes made in MODIFY do not affect the current display. When the MODIFY option has been selected, the Modify Defense menu (Figure 1) will be displayed. From here the user may do the following:

1. Add a new defense (asset). Select the NEW option from the Modify Defense Menu, and input a defense identifier, description, type and latitude/longitude or UTM. This will add a defense to the THRT file. To process this asset into the statespace select the UPDATE option from this menu.

2. Move a defense (asset). Select the asset you wish to move by clicking on the asset identifier. The Change Defense Menu will then be displayed

(Figure 2). The new location of the asset may be determined graphically or textually. Selecting MOVE TEXTUALLY will cause the program to request a UTM or latitude/longitude for the new position. Selecting MOVE GRAPHICALLY allows the user to click on the map on the new position for the asset. If pre-surveyed sites are associated with defense, they will be graphically displayed. When the program has moved the defense, the user will be returned to the Modify Threat Menu. The defense which has been moved will be highlighted on the menu which means that if the UPDATE option is selected, the new threat location and its effects will be put into the statespace.

3. Delete an asset. To delete a defense specify the asset from the Modify Threat Menu. The Change Defense Menu will be displayed, and the user should then select the DELETE THREAT option. The defense will be deleted when the UPDATE option is selected.

4. Update the statespace. To update the statespace with the changes which have been specified, select the UPDATE option off the Modify Threat Menu. Updating the statespace can be time consuming so all changes should be made before selecting UPDATE.

B. The user may also redeploy assets through the use of the WHAT IF option on the Display Menu. Using WHAT IF allows the user to see the terrain masked asset coverage for the individual threat as it is moved or added, however it is more time consuming than using MODIFY. Changes are temporary until saved via the SAVE command. To redeploy assets, select DEFENSE then DISPLAY. The Mask Assets Menu will be displayed (Figure 3). From this menu the user can do the following:

1. Add a new defense (asset). Select the NEW option from the Mask Assets Menu, and input a defense identifier, description, type and latitude/logitude or UTM. The exposure contour of the defense will be calculated and displayed on the map screen. To process the new defense into the statespace and THRT file, select the SAVE option.

2. Move a defense. Select the defense which is to be moved, and the Change Defense Menu will be displayed (Figure 2). The user may only move the defense graphically. Select MOVE GRAPHICALLY and click on the map display over the position at which the defense is to be positioned. When the program has finished calculating, the terrain contour of the selected defense at its new location will be highlighted. To save the new defense location select the SAVE option.

3. Restore moves asset. To restore a moved defense to its previous location, select the defense to be restored, and then select the RESTORE option from the Change Defense Menu. The defense exposure outline will be recalculated, and the defense will be redisplayed at its original position.

4. Display a defense exposure. To display a defense exposure, select the asset to display then select the TOGGLE DEFENSE option from the Change Defense Menu. The defense will be recalculated and displayed.

5. Remove a defense exposure. To remove a defense exposure outline, select the asset, and then select the TOGGLE DEFENSE option from the Change Defense Menu. The exposure outline will be removed from the map display, and the defense will no longer be highlighted.

6. Change the terrain masking altitude. The altitude at which the exposure outlines are calculated can be changed. Select the ALT option, from the Mask Defense menu and enter an altitude. All defenses

which are currently displayed will be redisplayed at the new altitude.

7. Save changes. To save the changes, and modify the statespace area, select the SAVE option from the Mask Assets Menu. Updating the statespace can be a time consuming process, and all changes should be saved at one time.

III. SUMMARY

Assets can be manipulated through use of the MODIFY or WHAT IF options. MODIFY is faster, but has the disadvantage of not showing the user the terrain masked envelopes of the defenses as the option does. The ——WHAT IF— WHAT IF option is much slower, but enables the user to observe the effects of moving a defense immediately.

IV. APPLICATION

Demonstration, if practical, hands on training.

INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAPID AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 6

CLASSIFICATION: UNCLASSIFIED

TOPIC: CREATING MINIMUM RISK ROUTES WITH RAIDES

TIME: 1 hr

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

   Instructional References:

   Instructional Aids: Viewgraphs,
      Overhead projector

TERMINAL OBJECTIVE: To enable
the students to use the
automatic routing function
of RAIDES.

ENABLING OBJECTIVES:

CRITERION TEST:

HOMEWORK:

I. INTRODUCTION

   A. Lesson Objectives

      To enable the student to create minimum risk routes.

   B. Lesson Overview

      1. To create minimum risk routes, the database must contain
         tasking consistent with its database.

      2. The user must select a penetration altitude for the attacking aircraft.

      3. Once tasking has been entered, the ROUTE function on the
         Plan Option Menu creates the minimum risk routes.

      4. To output routes, the user can select the REVIEW function from the Plan
         Options Menu. The route information goes to an ascii text file on the
         system.

II. PRESENTATION

   A. Tasking is presented in an input format which is read into the
      database and must be consistent with it.

      1. The tasking form -- modify to input new tasking, to
         change which targets are being hit, which units are
         being tasked (Figure 1).

      2. The DMPI table must contain the DMPI's (copy
         from another record if needed), and the TGT table
         must contain the geographic coordinates of the target.

      3. The AIRS table must contain the name of the unit tasked,
         and a BASE table record must exist for the current
         location of the unit.

      4. How to tell if everything's been put in correctly.

B. To create minimum risk routes select a penetration altitude via the PENETRATE option on the Main Menu, then the ROUTE option off the Plan Options Menu.

   1. Penetrate allows the user to select the altitude of the pentrating aircraft.
   2. Route generation is automatic.
   3. Routes can be displayed through selecting PLAN in the DISPLAY Menu.

C. Always save routes after creating or modifing them by selecting the SAVE option from the Plan Options Menu.

D. To output routes use REVIEW.

   1. REVIEW is selected in the Plan Options Menu and outputs an ascii text file.
   2. To get a detailed analysis of a route use REVIEW (Figure 1).

III. SUMMARY

Minimum risk routes are created automatically when the user selects the ROUTE option. Tasking must be input to the system before routes can be produced, and the tasking must be consistent with the database.

IV. APPLICATION

Demonstration, if practical, hands on training.

INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAIDES AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 7

CLASSIFICATION: UNCLASSIFIED

TOPIC: MODIFYING ROUTES WITH RAIDES

TIME: 2 hrs

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS
MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

    Instructional References:

    Instructional Aids: Viewgraphs,
        Overhead projector

TERMINAL OBJECTIVE: To enable
    the students to modify
    routes using the MANUAL
    function of RAIDES.

ENABLING OBJECTIVES:

CRITERION TEST:

HOMEWORK:

I. INTRODUCTION

A. Lesson Objectives

To enable the students to modify routes through use of the MANUAL function in RAIDES.

B. Lesson Overview

1. MANUAL allows the user to modify existing routes. The user must select the route to modify from a pop-up window.

2. MANUAL displays a route/leg summary in the RAIDES text window.

3. The user may select, delete or insert waypoints in the route.

4. The user may re-optimize routes.

II. PRESENTATION

A. Getting in to MANUAL

1. The MANUAL option is selected in the Plan Options Menu which is reached by selecting PLAN in the Main Menu (Figure 1).

2. Since MANUAL allows the user to modify routes, the user must select a route to modify from the SELECT MISSION pop-up box. The user may also exit MANUAL from this menu.

3. MANUAL options are selected by clicking on a command box on the graphics (map) screen. A textual route summary appears in the RAIDES text window as changes are made.

4. It is important to remember to not zoom (2X or 3X option in display) before entering MANUAL. Display the best map scale for the current routes in display, then enter MANUAL.

B. The textual summary (Figure 2)

1. Mission number, helicopter type, route section, and mode are displayed on the first line.

2. The second line of text is summary of leg previous to selected

point (on ingress the line to the friendly side of the
route, on egress the line to the hostile side of the
route). The leg summary gives approximate fuel consumed,
distance, danger and heading for the previous leg.

3. The third line of the text summary provides total route
figures for approximate fuel consumed, distance and danger.

4. Instructions for the user are provided on the text screen
for the operation selected.

C. The map display (Figure 3).

1. The operations of MANUAL revolve around the selected point
which is indicated to the user by a yellow ring drawn
around the current selected point on the map display.

2. Only half of the users route (ingress or egress) is displayed
at a time. The text display indicates which route half
is currently displayed.

D. The command boxes

1. SELECT -- changes the current selected point. Click on the
SELECT command box, then on the point which is to become
the new selected point.

2. INSERT -- inserts a waypoint after the selected point. Click
on the INSERT command box, then click on the map location
where the new point is to be (Figure 3a).

3. DELETE -- deletes the current selected point. Click on the
DELETE command box to delete the selected point. The new
selected point will be the next point in the route after
the deleted point (Figure 3b).

4. OPT -- optimizes from the end of fixed paths through the
FEBA area. Click on the OPT command box, then in the general
area to cross the FEBA. The program will select the closest
fixed path to the cursor position, then optimize (for minimum
risk routes) from the path to the target area.

5. INGRESS -- changes the portion of the route being worked on
to ingress. Click on the INGRESS box.

6. EGRESS -- changes the portion of the route being worked on
to egress. Click on the EGRESS box.

INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAPID AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 8

CLASSIFICATION: UNCLASSIFIED

TOPIC: OBSERVING MULTIPLE ROUTE COORDINATION

TIME: 30 min

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

Instructional References:

Instructional Aids: Viewgraphs,
           Overhead projector

TERMINAL OBJECTIVE: To enable
the students to use the
TIME PHASE display
capability of RAIDES.

ENABLING OBJECTIVES:

CRITERION TEST:

HOMEWORK:

I. INTRODUCTION

   A. Lesson Objective

      To enable the students to use the TIME PHASE display option
      to view multiple route coordination in RAIDES.

   B. Lesson Overview

      1. Time Phase allows the user to observe the relative positions
         of the attacking aircraft at various points in time.

      2. Time Phase is operated through use of command boxes located on the graphics
         (map) display.

      3. A text display explaining the mission codes is provided
         in the text window.

II. PRESENTATION

   A. Getting in to TIME PHASE

      1. TIME PHASE is selected in the Plan Options Menu. The Plan Options
         Menu is located by selecting PLAN in the Main Menu.

      2. TIME PHASE requires that the user provide a starting time and
         time increment which are entred in a pop-up box on the text display.

      3. To start the display, type a carriage return in the text window.

      4. Always use the left mouse button to make selections from the
         command boxes.

B. TIME PHASE Command Boxes

   1. ADVANCE -- moves the display forward in time from the current time by the current time increment. Click on the ADVANCE command box.

   2. REVERSE -- moves the display backward in time from the current time by the current time increment. Click on the REVERSE command box.

   3. START -- allows the user to change the start time and time increment for the time phased display. Click on the START command box.

   4. INCREM -- allows the user to change the start time and time increment for the time phased display. Click on the INCREM command box.

   5. HELP -- provides on line help on TIME PHASE options. Click on HELP command box. Help will be displayed on the text display.

   6. ABORT -- exit from TIME PHASE. Click on ABORT command box.

C. The Text Explanation

   1. A text screen display of information about the current picture is provided in the text window.

   2. The first line specifies start time, time increment, and current time (time display is of).

   3. Additional lines coordinate mission codes (on attack aircraft position symbols) to mission numbers.

III. SUMMARY

Time Phased display allows the user to observe attack aircraft spatial positions, and to show multiple route coordination.

IV. APPLICATION

Demonstration, if practical hands on training.

INSTRUCTOR/LESSON GUIDE

Training Activity

COURSE TITLE: RAPID AIR DEFENSE EVALUATION SYSTEM   DATE: TBD

INSTRUCTOR/LESSON GUIDE NUMBER: 9

CLASSIFICATION: UNCLASSIFIED

TOPIC: CREATING AND UPDATING A STATESPACE

TIME: 1 hr

CLASSROOM: TBD

LABORATORY: TBD

REFERENCES: RAIDES POSITIONAL HANDBOOK, RAIDES STUDENT'S TRAINING COURSE GUIDE, FLAPS USERS MANUAL, FLAPS DATABASE ADMINISTRATORS MANUAL

INSTRUCTIONAL MATERIALS:

· Instructional References:

Instructional Aids: Viewgraphs,
Overhead projector

TERMINAL OBJECTIVE: To have
the students be able to
create and modify the
statespace using SUPR.

ENABLING OBJECTIVES:

CRITERION TEST:

HOMEWORK:

I. INTRODUCTION

   A. Lesson Objective

      To enable the student to create and modify a statespace
      using SUPR.

   B. Lesson Overview

      1. SUPR (Statespace Update PRogram) uses location
         information for assets which is pulled from a
         formatted ascii text file resident on the system.

      2. SUPR culls old asset information out of the statespace
         based on the characteristics of the type of asset,
         and the time of last reporting.

      3. SUPR allows the user to cull data from the statespace
         based on time and/or type of asset.

II. PRESENTATION

   A. SUPR uses location information from a formatted ascii
      text file to update the statespace.

      1. If no source of automated data is available, asset
         information may be put into a file through use of
         an editor. The format of the asset position file is
         provided in the RAIDES positional handbook.

      2. Asset information is read in by selecting the LOCE
         option off the SUPR Main Menu and providing the file
         name of the asset position file.

      3. Asset information is stored, but the statespace is
         only updated on command.

      4. SUPR operates entirely through text menus.

   B. SUPR culls the statespace based on the location and time
      of last report of a asset.

1. Asset characteristics are used in combination with last report time and location to determine if reprocessing a particular asset is required.

2. Assets which have had no report since 2 times their asset types' dwell time are deleted from the statespace.

3. Assets which have been reported, but which have moved outside the associated uncertainty ellipse of the asset are deleted from their current position, and added at their new location.

4. Assets which have not moved outside their uncertainty ellipses have the time of last siting updated, and are not moved.

5. Actual statespace updating is performed when the UPDATE option on the SUPR Main Menu is selected.

C. The PURGE option allows the user to remove certain asset information from the statespace .

1. Purge by asset type by selecting the type of asset to purge, and the WHENEVER time option.

2. Purge by time of last reporting by selecting the ALL asset types option and then specifying the time to purge from.

3. Purge by asset and time by specifying the type and time to purge on.

III. SUMMARY

SUPR allows the user to read in an ascii text file of asset locations, and create or modify the statespace based on that input data.

IV. APPLICATION

Demonstration, if practical, hands on training.